would be pure speculation. It is possible that it may act by decreasing the cerebral hyperemia. By equalizing the circulation it may tend to prevent the edema of the brain and meninges, "wet brain," so frequently seen at autopsies on cases of delirium tremens.

Stomachics were used extensively, but were not taken into account in these statistics.

Stimulants were used very little, alcohol alone being consistently used. Other stimulants were used only when the patient was in a moribund condition. It would be interesting to know what would be the effect of a systematic use of digitalis, caffein and strychnin throughout the course of the disease, but the series of cases under discussion does not furnish the necessary data.

It will be obvious from a study of the accompanying tables that drugs are not of such value in the treatment of these patients that other therapeutic measures can be neglected. This is especially true of the wildly delirious patients, for whom much more can be done by nursing than by drugs. But I can not here do more than emphasize the importance of proper methods of restraint, frequent administration of liquids and the use of sedative baths.

In the incipient cases much can be done with drugs. Large doses of the sedatives should be given, especially chloral and bromids, and these should be repeated every four hours and kept up for several days after all signs of the disease have disappeared. Whiskey should be given regularly. Ergot is also of value and may be given as the fluidextract, or in cases complicated with gastritis the aseptic preparations of ergot may be given hypodermically. In the hospital, dram doses of the fluidextract were given every four hours for a week and more without any bad effects. If a standardized preparation of the fluidextract were used, smaller doses would probably be equally effective. Stomachics are often indicated, especially capsicum. Stimulants, aside from alcohol, are unnecessary except in cases showing cardiac incompetence.

In the cases with delirium care must be taken not to overdose the patients. Sedatives may be used with care, not more than 30 grains of chloral or its equivalent in other sedatives being given in twenty-four hours. Scopolamin is dangerous and whiskey useless. Ergot seems to have been of the greatest value and certainly deserves an extended trial. It is a question whether stimulants should be given to all delirious patients, but when there are signs of failing heart action, of developing "serous meningitis," or when the patient is passing from delirium to stupor and coma, heart stimulants should be given hypodermically.

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TUBERCULOSIS

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It seems strange that after the many years of study devoted to tuberculosis by the medical profession, in medical schools and text-books on the practice of medicine, the fact that this is a general constitutional disease is apparently lost sight of; a good definition or a description of tuberculosis as such is rarely, if ever, seen.

Text-books all define pulmonary tuberculosis and fully describe its etiology, pathology, symptoms and treatment; casually mention in this connection the possibility of secondary infection of other organs and tissues, but describe these secondary manifestations of a general systemic infection under chapters devoted to such special organs or tissues. That this is illogical must be apparent to every thinking professional man.

Allow any patient afflicted with tuberculosis to go his way untreated and, sooner or later, secondary involvements are certain to manifest themselves. I have never seen at postmortem a single instance in which some such secondary lesion was not found in some organ or tissue, even though it had not been manifest clinically during life. I regret that this is not confined to untreated cases, for owing to our lack of knowledge in the past of the treatment of tuberculosis many patients have followed this course.

In all text-books this disease is usually defined and described along the lines laid down in a well-known text-book on the practice of medicine (edition of 1907), for the author of which I entertain the greatest respect and admiration, in which tuberculosis is defined in the following manner:

"Tuberculosis is a general or local infectious inflammatory disease, the result of the implantation and proliferation of the tubercle bacillus."

The first chapter considers etiology and discusses the tubercle. The disease is then classified under two divisions, acute and chronic tuberculosis, and these are subdivided as follows:

II.—Acute tuberculosis.
  1. Diffuse general tuberculosis (acute milliary).
  2. Pulmonary form of acute tuberculosis.
  3. Tuberculous meningitis.
III.—Chronic tuberculosis.
  1. Pulmonary tuberculosis.
    (a) Chronic ulcerative phthisis.
    (b) Fibroid phthisis.

The next chapter is headed:

IV.—Tuberculosis of lymphatic glands.
V.—Tuberculosis of the serous membranes.
  (a) Tuberculosis of the pleura.
  (b) Tuberculosis of the peritoneum.
VI.—Tuberculosis of the genitourinary organs.
VII.—Tuberculosis of the mammary glands.
VIII.—Tuberculosis of the heart and blood vessels.

Each of the chief foregoing chapters treats of the subject as if it were a distinct disease, giving definition, etiology, pathology, symptomatology, treatment and prophylaxis.

Among the chapters under the heading of tuberculosis we find no mention of that frequent pathologic condition, tuberculous laryngitis, but this important feature is considered under diseases of the larynx. Tuberculous infections of the serous membranes, and of the genitourinary tract, are considered as coming under the domain of the surgeon. Tuberculosis of the bones and of the joints is not mentioned, evidently being left to the text-books on surgery. Tuberculosis of the skin (lupus) is briefly mentioned in connection with the description of the tubercle bacillus.

I believe that, from our knowledge of tuberculosis, the definition above mentioned is manifestly wrong; tuberculosis is pre-eminently a disease of systemic infection, is constitutional in its character, and is never a local condition.

The classification into acute and chronic forms is not borne out by the facts; tuberculosis is never an acute process, but is necessarily a chronic condition pathologically: at times it does run a rapidly fatal course, but this can not possibly cause it to be classified as an acute form of the disease, but rather, I would suggest, as a fulminating or pernicious type.

Under the heading "Chronic Tuberculosis" we find pulmonary tuberculosis, considered under the subdivisions, chronic ulcerative phthisis and fibroid phthisis; these are merely unfavorable or favorable phases of the same morbid process occurring in different patients, due probably, first, to a difference in the virility of the infecting organisms; second, to the greater or less resisting power of the respective patients (acquired or inherited); third, to environment and social condition; and, fourth, to the personal habits of the individual.

We have recognized four avenues through which the infecting organism may invade the human body, viz.: through the intestines, through the tonsils, by inspiration, and through wounds of the skin.

Heretofore it has been considered that the disease was the outcome of the implantation of the bacillus in these organs or tissues, and that it produced a pathologic change in the tissues so invaded, eventually giving rise to systemic infection.

For a long time I have believed that this view is incorrect[1] and that the primary lesion is seldom, if ever, produced in this way, but that the bacilli so introduced into the tissues first find their way into the blood or lymph, and here develop and multiply (period of incubation), eventually selecting the least resistant tissue, in which the primary pathologic lesion of tuberculosis is developed (incipient tuberculosis).

From this initial lesion the well-known pathologic and clinical features of the disease extend, and may eventually give rise to evidences of most profound systemic infection, and an increasing area of local involvement around the primary lesion, and in many instances (always so in advanced cases), of more or less numerous secondary involvements of other organs and tissues.

The theory that the above views are correct is amply substantiated by the work of Lustgarten and others, who found in the blood and lymph of syphilitics (evidently complicated by tuberculosis) a bacillus morphologically identical with and having the same staining characteristics as the tubercle bacillus, which at the time they thought to be the specific organism of syphilis, but which view, considering our present knowledge of the *Treponema pallidum,* was incorrect. The Lustgarten bacillus could not possibly have been the smegma bacillus, for this organism has never been found in the blood or lymph.

Having eliminated the possibility of the Lustgarten bacillus being either the specific organism of syphilis, or the smegma bacillus, the only probable acid-fast bacillus left for consideration is the tubercle bacillus, which I am convinced is identical with that found by Lustgarten and his followers.

The recent work of Rosenberger[2] is the strongest possible evidence of the correctness of the views which I have held and advanced from time to time. Clinical statistics are sufficient evidence of the fact that the primary lesion of tuberculosis is most often found in the right pulmonary apex, and though this primary lesion may occur in any organ or tissue, I am strongly inclined to the belief that, having its beginning as a purely general systemic infection, it makes its first pathologic changes manifest in the lungs with such frequency as to enable us to exclude primary tuberculosis from any other organ or tissue. In the event of tuberculosis being clinically manifested in any tissue or organ other than the lungs, a careful examination of these organs by a competent physical diagnostician will usually demonstrate its presence in these organs.

Should this not be the case, I believe that the primary lesion was in the lungs but has healed, leaving behind no local evidence of its former presence.

The terms pulmonary tuberculosis, or tuberculosis of any other organ or tissue, are misnomers and are fundamentally wrong, because they are applied to diseases which do not exist in themselves, but are only local pathologic exhibitions of a constitutional or general systemic infection.

The following definition and classification, though necessarily faulty, I believe will fairly describe tuberculosis as we now know it:

Tuberculosis is a chronic, constitutional, infectious granulomatous disease, produced by the tubercle bacillus, characterized pathologically by round-celled infiltration of the organs or tissues, and symptomatically by more or less evidence of systemic infection associated with symptoms relative to and characteristic of an inflammatory process in the organs or tissues locally involved.

CLASSIFICATION

Etiology: Described
Invasion: Avenues of, described.
Pathology: Described.
Stages: Incubation, incipient, moderately advanced, advanced.
Types: Latent, chronic, fulminating or pernicious.

SECONDARY MANIFESTATIONS DESCRIBED

The stage of incubation is that period between the invasion of the bacillus and the development of the primary pathologic lesion. It is of indefinite duration, and probably produces a rapid pulse as the only symptom.

The incipient stage immediately follows the development of the primary lesion. There are symptoms of mild systemic infection associated with slight evidences of localized tissue involvement. The primary lesion is a tubercle, which may appear in any organ or tissue in which the infecting organism finds lodgment and a favorable field for growth. In most instances this is in pulmonary tissue (which is least resistant) and most frequently the right apex.

The moderately advanced stage is that in which the symptoms of systemic infection and of the local manifestations of the disease are more marked, giving evidences of increased area involved in the organ or tissue primarily affected, or of autoinfection of some other organ or tissue.

In the advanced stage there is evidence of profound systemic infection, with marked local involvement of one or more organs or tissues.

TREATMENT

From a year's experience with the administration of mercury by deep muscular injections associated with the general treatment advocated for this disease, I again assert the specific nature of mercury in relation to tuberculosis, and in support of this I submit the following statistics. (See next page.)

There were 3 additional deaths in the hospital during the year, 2 from typhoid and 1 following operation for appendicitis. Four of the 16 who died had typhoid in

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[1] Annual Report of the U. S. Naval Hospital, Las Animas, Colorado, for 1908: THE JOURNAL A. M. A., Nov. 28, 1908.
[2] Am. Jour. Med. Sc., February, 1909.

August, and their deaths were undoubtedly indirectly due to this disease.

	No. of Patients Who Have Remained in Hospital Two or More Months.	Those Who Voluntarily Took the Mercury Treatment.	Those Who Preferred the Routine Treatment Solely.
Cured	8	7	1
Marked improvement	43	43	0
Improved	16	14	2
Slight improvement	17	10	7
Stationary	19	0	19
Failed	42	4	38
Died	16	5	11
Total number	161	83	78

Of those cured, 87.5 per cent. took mercury treatment; 12.5 per cent. took routine treatment.

Of those showing marked improvement, 100 per cent. took mercury treatment; none took routine treatment.

Of those improved, 87.5 per cent. took mercury treatment; 12.5 per cent. took routine treatment.

Of those slightly improved, 58.82 per cent. took mercury treatment; 41.18 per cent. took routine treatment.

Of those remaining stationary, none took mercury treatment; 100 took routine treatment.

Of those who failed, 9.52 per cent. took mercury treatment; 90.48 per cent. took routine treatment.

Of those who died, 31.2 per cent. took mercury treatment; 68.8 per cent. took routine treatment.

Combining the items cured, marked improvement, improved and slightly improved, under the heading improved; stationary as such, and combining the items failed and died under the heading failed, the following percentages pertain:

Of the 83 patients on mercury, 89.16 per cent. improved; none stationary; 10.84 per cent. failed.

Of the 78 patients on routine treatment, 12.82 per cent. improved; 24.36 per cent. remained stationary; 62.82 failed.

The above patients are classed as follows:

Incipients (first stage)	1
Moderately advanced (second stage)	59
Advanced (third stage)	101
Total number	161

In the above cases the following secondary tuberculous involvements have been diagnosed clinically:

Brain, 1; larynx, 16 (13 ulcerative and 3 infiltrated); larynx and pharynx (ulcerative), 3; intestines, 9; stomach, 1; genitourinary tract, 3; general glandular infection, 4; ischiorectal fistula, 6; bone infection, 3.

At postmortem in 19 cases tuberculosis of various organs and tissues have been found as follows:

Intestines, 13; left kidney, 9; right kidney, 6; spleen, 7; liver, 4; pancreas, 0; mesenteric glands, 14; heart, 1; left lung, 19; right lung, 19; larynx, 7.

Of the complications existing in these 161 cases, the following were found:

Cardiac hypertrophy, 1; mitral regurgitation, 3; tricuspid stenosis, 3; pulmonary stenosis, 2; arteriosclerosis, 5; chronic passive congestion of liver and spleen, 16—of the liver 19 and of the spleen 15; hypertrophic pharyngitis, 1; glaucoma, 1; exophthalmic goiter, 1; malaria, 3; appendicitis, 1; syphilis, 8; displaced kidney, 1; typhoid in 25 cases.

Since November, 1908, in this hospital we have been administering mercury in gradually increasing doses until the therapeutic limit is reached, after having established the maximum dose, it is then divided by two and the injections continued on this dose. During the intervals between injections the use of potassium iodid has been discontinued.

This procedure has increased the efficiency of the treatment in a decided manner.

In addition to the cures reported up to Dec. 31, 1908, there are now three officers and two enlisted men ready for duty, and about six additional men who will probably be ready for duty in from four to six weeks.

U. S. Naval Hospital.

MEDICAL EDUCATION

A PLEA FOR THE DEVELOPMENT OF LEADERS

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It is related that an American officer, who was visiting St. Petersburg, asked the Russian officer by whom he was being conducted through the grounds of the palace why a certain sentinel, who was pacing up and down in the middle of the courtyard, should have been stationed in so unusual a place. The Russian was unable to answer, but promised to investigate. This led to the discovery that sixty years before, one of the little princesses had been walking in the courtyard with her father in the spring of the year and had found a snowdrop growing in the middle of the yard. She expressed a desire that no one pick it, and her father therefore ordered a sentinel to be placed on duty to protect the snowdrop. The order had never been rescinded, and for sixty years a guard had been pacing up and down in this position.

So it is in our hospitals; we find the Old Guard pacing up and down in defense of traditional snowdrops whose value neither they nor any one else are able adequately to explain.

Take, for example, the rotation in service. What would have been thought if Dr. Curtis, Dr. Austin Flint, Sr., and I had regularly exchanged laboratories after a service of four months each? You would have said that the scientific men had gone crazy, and you would have been right. There must be pride in one's own scientific habitat if there is to be success. Take another abuse, that of holding a hospital position and never visiting the hospital, but appointing some dependent to do it for one during the period of his good behavior. It is as though I still maintained the power of appointment to the chair of physiology at the Yale Medical School, where I was once professor. If I had such power, and with increasing age became more and more sensitive regarding any proposition to curtail it, and if by degrees I developed an egotism bordering on paranoia, you would then have in me as true an obstacle to proper progress as now abides in the Old Guard still marching up and down in the middle of the hospital grounds protecting the abuses of the past.

A well-known architect tells me that people from other parts of the country who come to New York return to their homes convinced that the architecture of residential Fifth Avenue represents the greatest existing achievements. We all know that it only requires visits to Oxford and Cambridge in England, to the Louvre and Notre Dame in Paris, to the palaces of the Italian nobility in Genoa, Venice, Florence and Rome to realize that Fifth Avenue represents architectural insanity.

If one is to understand one's own failings it will not do to limit one's horizon. It is necessary to travel. If one visits England one finds there is little improvement on our own medical methods. The same thing is true of France. If one passes to Germany, however, one finds there a set of medical men who have no counterpart in this country. Take Friedrich Müller, pro-